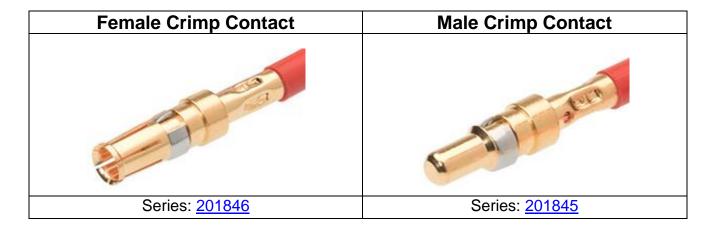
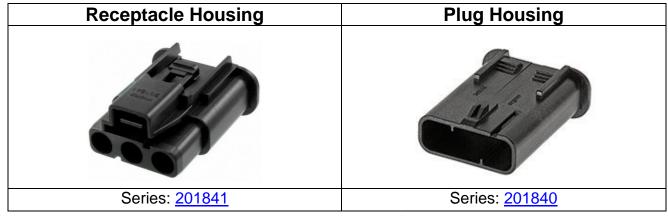


# MULTICAT<sup>TM</sup> IN-LINE POWER

# Wire-To-Wire AND Wire-To-Board **CONNECTOR SYSTEM**







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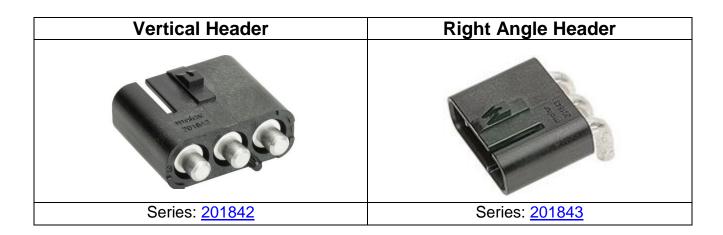
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Receptacle Housing With CPA	Plug / Receptacle Backshell
Series: <u>201841</u>	Series: <u>201844</u>





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### 1.0 SCOPE

This Product Specification covers the 7.40 mm (.291 inch) centerline (pitch) connector series terminated with 8 to 18 AWG wire using crimp technology with gold plating.

This Product Specification also covers the 7.40 mm (.291 inch) centerline (pitch) printed circuit board (PCB) connector series with gold plating

### 2.0 PRODUCT DESCRIPTION

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### 2.1 **DESCRIPTION, SERIES NUMBER, AND LINKS**

DESCRIPTION	SERIES NUMBER				
MULTICAT PLUG HOUSING 1X3 KEY A BLACK					
MULTICAT PLUG HOUSING 1X3 KEY B GRAY	004040				
MULTICAT PLUG HOUSING 1X4 KEY A BLACK	<u>201840</u>				
MULTICAT PLUG HOUSING 1X4 KEY B GRAY					
MULTICAT RECEPTACLE HOUSING 1X3 KEY A BLACK					
MULTICAT RECEPTACLE HOUSING 1X3 KEY B GRAY					
MULTICAT RECEPTACLE HOUSING 1X4 KEY A BLACK					
MULTICAT RECEPTACLE HOUSING 1X4 KEY B GRAY	201041				
MULTICAT RECEPTACLE HOUSING WITH CPA 1X3 KEY A BLACK	<u>201841</u>				
MULTICAT RECEPTACLE HOUSING WITH CPA 1X3 KEY B GRAY					
MULTICAT RECEPTACLE HOUSING WITH CPA 1X4 KEY A BLACK					
MULTICAT RECEPTACLE HOUSING WITH CPA 1X4 KEY B GRAY					
MULTICAT VERTICAL HEADER 1X3 KEY A BLACK					
MULTICAT VERTICAL HEADER 1X3 KEY B GRAY	204042				
MULTICAT VERTICAL HEADER 1X4 KEY A BLACK	<u>201842</u>				
MULTICAT VERTICAL HEADER 1X4 KEY B GRAY					
MULTICAT RIGHT ANGLE HEADER 1X3 KEY A BLACK					
MULTICAT RIGHT ANGLE HEADER 1X3 KEY B GRAY	204042				
MULTICAT RIGHT ANGLE HEADER 1X4 KEY A BLACK	<u>201843</u>				
MULTICAT RIGHT ANGLE HEADER 1X4 KEY B GRAY					
MULTICAT BACKSHELL 1X3 BLACK 8-10 AWG					
MULTICAT BACKSHELL 1X3 GRAY 8-10 AWG					
MULTICAT BACKSHELL 1X3 BLACK 12-18 AWG					
MULTICAT BACKSHELL 1X3 GRAY 12-18 AWG	201944				
MULTICAT BACKSHELL 1X4 BLACK 8-10 AWG	<u>201844</u>				
MULTICAT BACKSHELL 1X4 GRAY 8-10 AWG					
MULTICAT BACKSHELL 1X4 BLACK 12-18 AWG					
MULTICAT BACKSHELL 1X4 GRAY 12-18 AWG					
DESCRIPTION	SERIES NUMBER				
MULTICAT MALE CRIMP CONTACT 8-10 AWG					
MULTICAT MALE CRIMP CONTACT 12-14 AWG	<u>201845</u>				
MULTICAT MALE CRIMP CONTACT 16-18 AWG					
MULTICAT FEMALE CRIMP CONTACT 8-10 AWG					
MULTICAT FEMALE CRIMP CONTACT 12-14 AWG	<u>201846</u>				
MULTICAT FEMALE CRIMP CONTACT 16-18 AWG					
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### 2.2 **DIMENSIONS, MATERIALS, PLATINGS**

Refer Sales Drawings 2018400000-SD, 2018410000-SD, 2018420000-SD, 2018430000-SD, 2018440000-SD, 2018450010PSD, 2018450020PSD, 2018450040PSD, 2018460010PSD, 2018460020PSD, 2018460040PSD.

### 2.3 **ENVIRONMENTAL CONFORMANCE**

To find product compliance information:

- a. Go to molex.com
- b. Enter the part number in the search field.
- c. At the bottom of the page go to "Environmental" to see compliance status.

### SAFETY AGENCY LISTINGS 2.4

UL / cUL File Number: E29179

### APPLICABLE DOCUMENTS AND SPECIFICATION 3.0

### 3.1 **MOLEX DOCUMENTS**

MultiCat In-Line Power Connector System Test summary 2018400000-TS-000 MultiCat In-Line Power Connector System Application summary 2018400000-AS-000

Molex Quality Crimping Handbook Order No. 63800-0029

Molex Solderability Specification SMES-152

Molex Heat Resistance Specification AS-40000-5013

Molex Package Handling Specification 454990100-PK

ATS - Application Tooling Specification\*

\*Application Tooling Specification for terminals is not provided in this document. ATS for terminals can be available from respective terminal part number page in Molex.com

### 3.2 INDUSTRY DOCUMENTS

EIA-364-1000

### 4.0 **ELECTRICAL PERFORMANCE RATINGS**

**VOLTAGE** 4.1

**ECM INFORMATION:** 

EC No: **621534** 

REVISION:

1200 Volts AC/DC

4.2 **APPLICABLE WIRES** 

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## PRODUCT SPECIFICATION

Wire Gage	Insulation Diameter
8	5.84 mm
10	4.03 mm
12	3.40 mm
14	2.92 mm
16	2.59 mm
18	2.36 mm

### 4.3 CURRENT RATING (MAXIMUM AMPERES)

Note: Ratings shown represent *MAXIMUM* current carrying capacity of a fully loaded connector with all circuits powered using **UL1199** stranded wire. Ratings are based on a 30°C maximum temperature rise limit over ambient (see section 6.1.4 for specifications). Current is dependent on connector size, ambient temperature, printed circuit board characteristics and related factors. Actual current rating is application dependent and should be evaluated for each use.

Note: PCB trace design can greatly affect temperature rise results in Wire-to-Board applications.

	3 CIF	RCUIT	4 CIRCUIT		
	Wire-to-Wire	Wire-to-Wire Wire-to-Board		Wire-to-Board	
8 AWG	40 A	34 A	38 A	34 A	
10 AWG	32 A#	28 A#	31 A#	28 A#	
12 AWG	26 A	24 A	26 A	24 A	
14 AWG	20 A#	20 A#	21 A#	20 A#	
16 AWG	16 A#	16 A#	17 A#	16 A#	
18 AWG	14 A	14 A	14 A	14 A	

#Interpolated

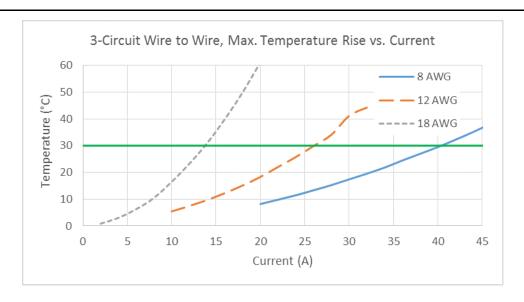


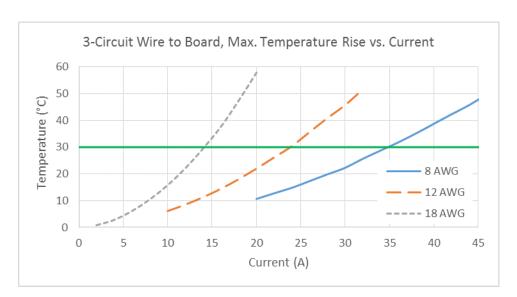
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## PRODUCT SPECIFICATION





PRE-RELEASE PRE-RELEASE PRE-RELEASE NSE ONLY USE ONLY

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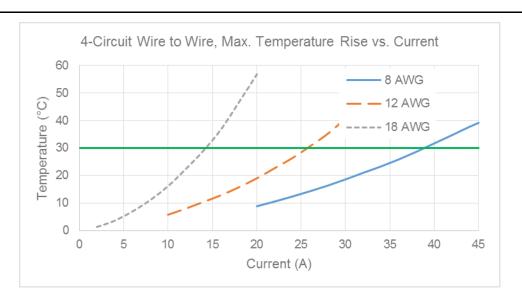
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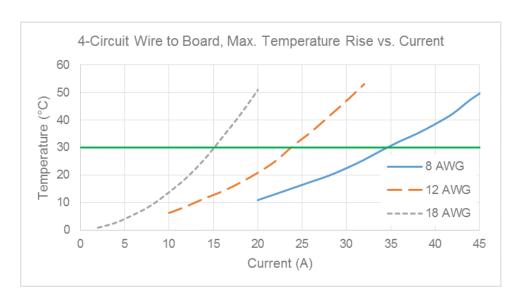


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## PRODUCT SPECIFICATION





PRE-RELEASE PRE-RELEASE PRE-RELEASE NSE ONLY USE ONLY

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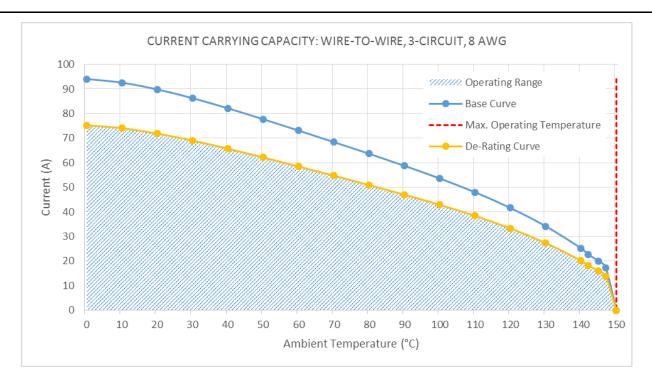


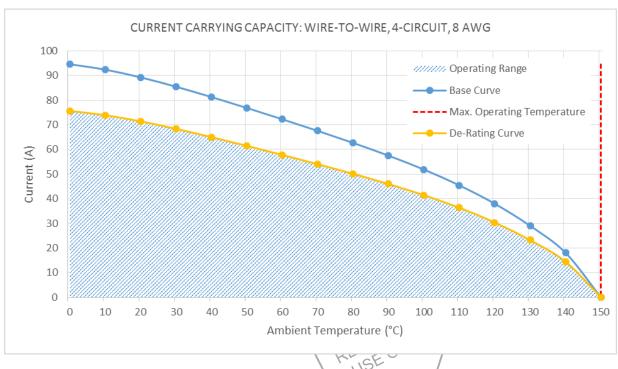
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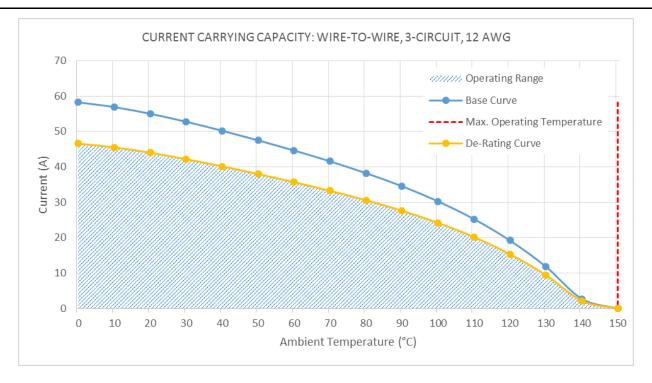
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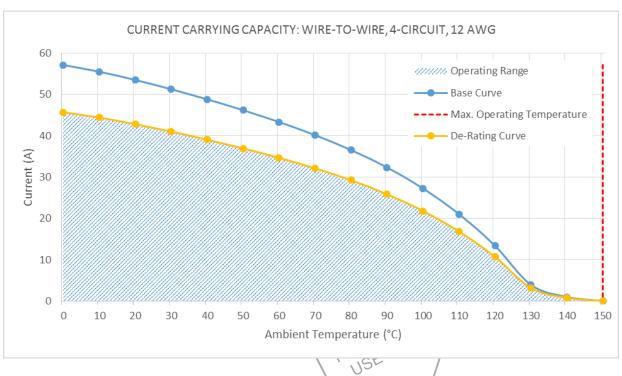
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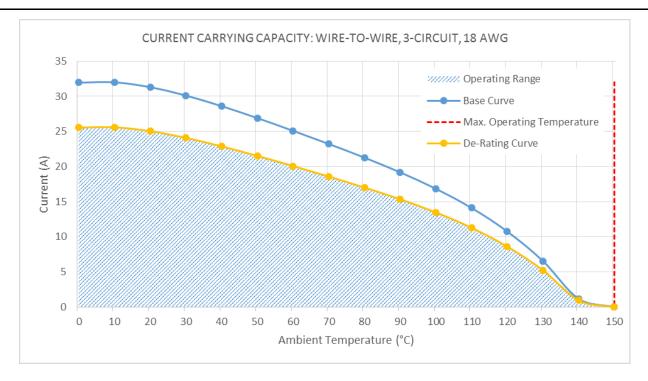
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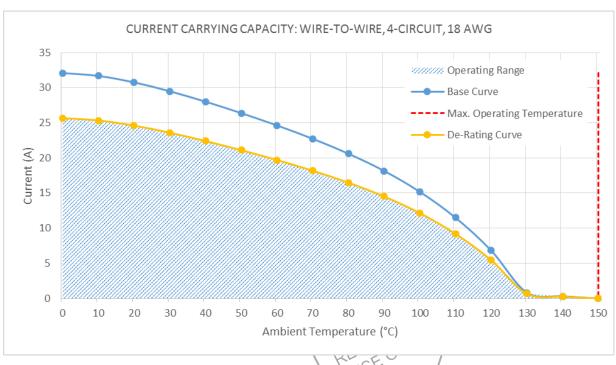
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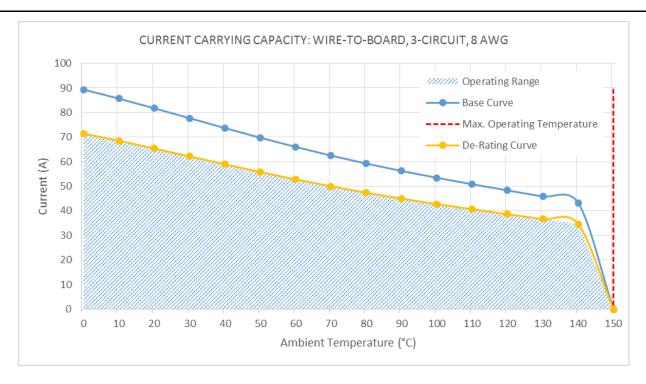
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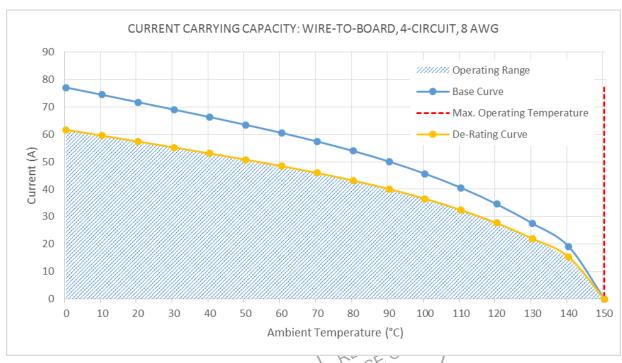
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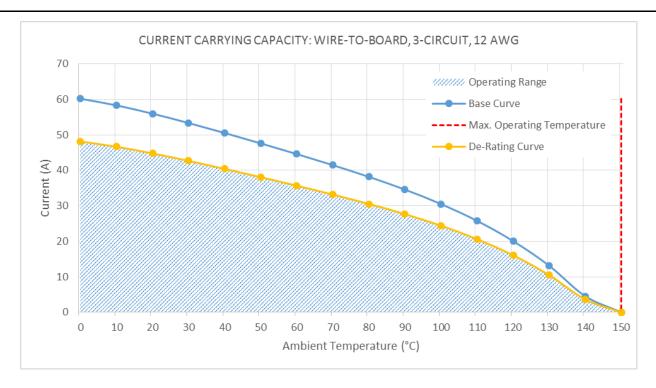
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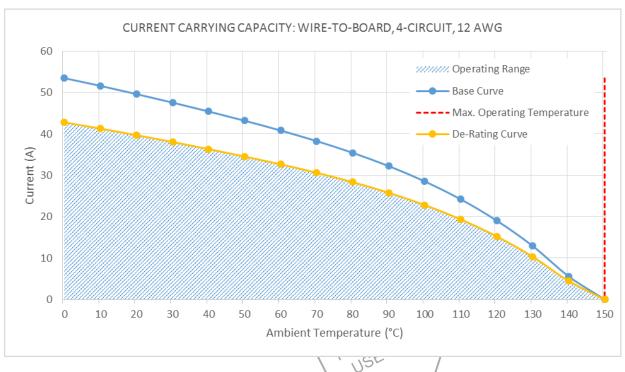
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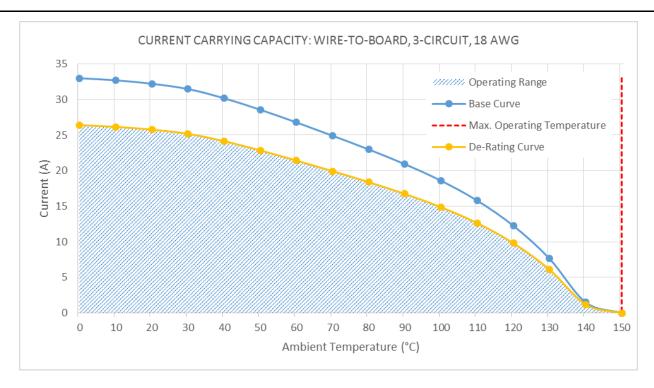
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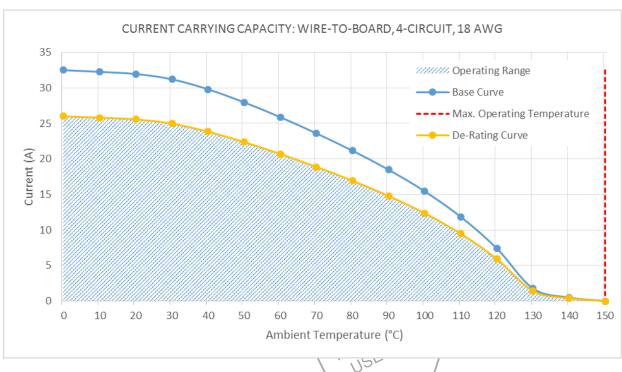
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## PRODUCT SPECIFICATION

### 4.4 TEMPERATURE

Operating Temperature Range : - 40°C to + 150°C

### 4.5 DURABILITY

Plating Type	Number of Cycles
Gold Plated	500

As tested in accordance with EIA-364-1000 test method (see sec 6.2.7 of this specification). Durability per EIA-364-09

### 5.0 QUALIFICATION

Laboratory condition, sample selection and test sequences are in accordance with EIA-364-1000.



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### **PERFORMANCE** 6.0

### 6.1 **ELECTRICAL PERFORMANCE**

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.1.1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. EIA-364-23B	1 mΩ MAXIMUM [initial]
6.1.2	Insulation Resistance	Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.  EIA-364-21D	1000 MΩ MINIMUM
6.1.3	Dielectric Withstanding Voltage	Mate connectors: apply a voltage of 3400 VAC for 1 minute between adjacent terminals and between terminals to ground.  EIA-364-20E, Method B	No breakdown; current leakage < 5 mA
6.1.4	Temperature Rise (Current Profiling)	Mate connectors: measure the temperature rise at the rated current. EIA-364-70B, Method 2	Temperature rise: +30 °C MAXIMUM [over ambient]
6.1.5	Temperature Rise (18-day Stability)	Mate connectors: measure the temperature rise at the rated current after: 96 hours (Steady state) 240 hours (Current cycling) 45 minutes ON and 15 minutes OFF per hour 96 hours (Steady state)  Steady state per EIA-364-70B, Method 2. Current cycling per EIA-364-55A, Test Condition A, Test Method 4.	Temperature rise: +30 °C MAXIMUM [over ambient]



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### 6.2 **MECHANICAL PERFORMANCE**

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT		
6.2.1	Connector Mate and Unmate Forces [Initial cycle] Latch disabled (See section 7.0 for additional information)	Mate and unmate connector (male to female) at a rate of 25 ±6 mm (1 ± ½ inch) per minute. EIA-364-13E, Method A	MAXII	20 N (4.49 lbf) MUM mate force per circuit and 5 N (1.12 lbf) UM unmate force per circuit	
6.2.2	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of $25 \pm 6$ mm $(1 \pm \frac{1}{4}$ inch). EIA-364-05B		40 N (8.99 lbf) MUM insertion force	
6.2.3	Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. EIA-364-29C, Method C	MININ after expose 1	75 N (39.34 lbf) MUM retention force High Temperature sure (see item 6.3.4) 50 N (33.72 lbf) MUM retention force	
6.2.4	Housing Locking Mechanism Strength (after 500 Cycles)	Exert an axial force at a rate of 13mm per minute (0.5 inch per minute) to separate the housing halves.  EIA-364-98		200 N (44.96 lbf) MINIMUM retention force	
6.2.5	Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch). EIA-364-08B	8 10 12 14 16 18	MINIMUM pullout force 450 N (101.2 lbf) 355 N (79.8 lbf) 275 N (61.8 lbf) 200 N (44.9 lbf) 135 N (30.3 lbf) 90 N (20.2 lbf)	
6.2.6	Connector Audible Feedback	The connector lock must provide audible feedback during connector mating. USCAR-2, Rev 6, Paragraph 5.4.7	7	dB over Ambient	
6.2.7	Durability EIA-364-1000 Test Group 7 (See section 8.0)	Mate and unmate connectors up to 500 cycles at a rate of 300 cycles per hour. Actuate housing latch mechanism for each cycle.  EIA-364-09	(ch Dielectric I curre	mΩ MAXIMUM lange from initial) & c Withstanding Voltage: No breakdown; ent leakage < 5 mA & ual: No Damage	

## **MultiCat Power Connectors Web Page**



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Ao	DATE: 29 / 7 /2019	LINE	E POV	VER CONNECTOR	R SYSTEM (WtV	V/WtB)	10 01 20
DOCUMEN	T NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	<u>APPRO</u>	VED BY:
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### 6.2 **MECHANICAL PERFORMANCE CONTINUED**

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.2.8	Vibration (Random) Shock (Mechanical) EIA-364-1000 Test Group 3 (See section 8.0)	Mate connectors and vibrate per EIA 364-28, test condition VII.  (Acceleration 3.1 g)  Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X, ±Y, ±Z axes (18 shocks total). EIA-364-27C, Test Condition A	5 mΩ MAXIMUM (change from initial) & Discontinuity < 1 microsecond
6.2.9	Connector Position Assurance (CPA) Insertion Force	The force to insert the CPA from the preload (as shipped) position to the final position at a rate of 50 ± 6 mm (2 ± ¼inch) per minute.	25 N (5.62 lbf) MAXIMUM insertion force
6.2.10	Connector Position Assurance (CPA) Extraction Force	The force to extract the CPA from the final position to the preload position at a rate of 50 ± 6 mm (2 ± ¼ inch) per minute.	40 N (8.99 lbf) MAXIMUM extraction force
6.2.11	Backshell Latch retention	The force to separate the backshell halves at 25.4 mm/min	200 N (44.96 lbf) MINIMUM retention force
6.2.12	Backshell Latch Insertion	Mate the backshell halves at 25.4 mm/min	20 N (4.49 lbf) MAXIMUM insertion force



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### 6.3 **ENVIRONMENTAL PERFORMANCE**

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.3.1	Shock (Thermal) EIA-364-1000 Test Group 2A & 2B (See section 8.0)	Mate connectors; expose to 5 cycles of:  Temperature °C -40 +0/-3 30 +25 ±10 5 MAXIMUM +150 +3/-0 30 +25 ±10 5 MAXIMUM EIA-364-32D, Test Condition 4	5 mΩ MAXIMUM (change from initial) & Visual: No Damage
6.3.2	Cyclic Temperature & Humidity EIA-364-1000 Test Group 2A & 2B (See section 8.0)	Mate connectors: cycle per EIA-364-31: 24 cycles at temperature 25 ± 3 °C at 80 ± 5% relative humidity and 65 ± 3 °C at 50 ± 5% relative humidity; dwell time of 1.0 hour; ramp time of 0.5 hours.	5 mΩ MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage
6.3.3	Corrosive Atmosphere: Mixed Flow Gas (MFG) EIA-364-1000 Test Group 4 (See section 8.0)	Mate connectors: Test per EIA-364-65, Class 2A	5 mΩ MAXIMUM (change from initial) & Visual: No Damage
6.3.4	High Temperature Exposure (See section 8.0)	Mate connectors per durability and expose to 1008 hours at 150 ± 2 °C USCAR-2, Class T4	5 mΩ MAXIMUM (change from initial)  Visual: No Damage
6.3.5	Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
6.3.6	Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 10 ± 0.5 seconds; Solder Temperature: 245 ± 5 °C	Visual: No Damage to insulator material

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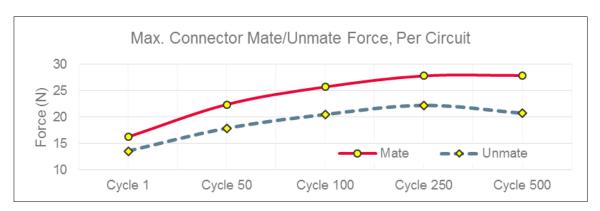


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# PRODUCT SPECIFICATION

## 7.0 SUPPLEMENTARY INFORMATION

Connector mate/unmate [Item 6.2.1]





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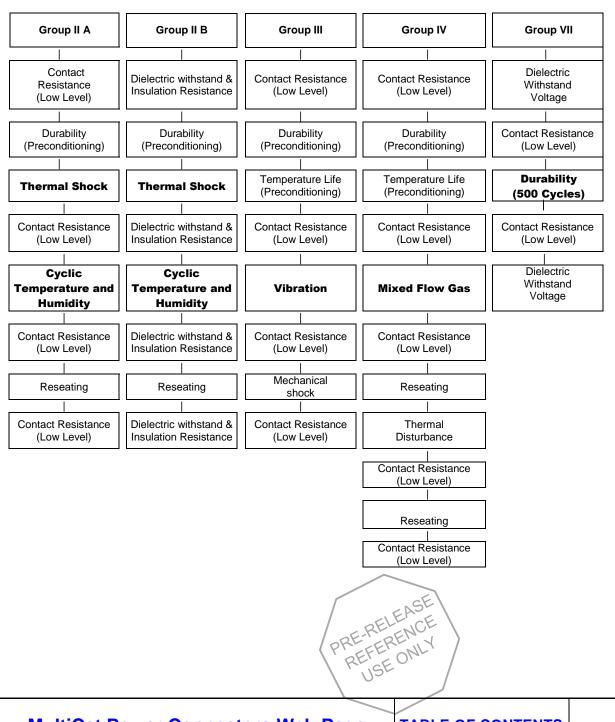
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## PRODUCT SPECIFICATION

### 8.0 TEST SEQUENCE GROUPS

Reliability Test Sequences per EIA-364-1000



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APPROVED BY:

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## PRODUCT SPECIFICATION

### **USCAR**

Contact Resistance (Low Level)

Durability (10 cycles)

Contact Resistance (Low Level)

High Temperature 150°C for 1008 hours

Contact Resistance (Low Level)

Terminal Retention (in Receptacle) Temperature Rise

T-Rise Profiling

Steady State Temperature Rise

### **Individual Tests**

Connector Mate / Un-mate Force

Crimp Terminal Insertion force

Crimp Terminal Retention force

Housing Locking Mechanism Strength

Wire Pullout force (Axial)

Connector Audible Feedback

Connector Position Assurance (CPA) Insertion Force

Connector Position Assurance (CPA) Extraction Force

**Backshell Latch Retention** 

**Backshell Latch Insertion** 



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## PRODUCT SPECIFICATION

### 9.0 SOLDER INFORMATION

Per SMES-152 and AS-40000-5013

\*These specifications establish standard solderability test methods used to evaluate a products ability to accept molten solder. Solder Process Temperatures and Reflow Solder Profiles will vary based on application, equipment, solder paste, PCB thickness, etc.

## 9.1 SOLDER PROCESS TEMPERATURES \*

Wave Solder Temperature: 245°C Maximum

Molex Solderability Specification

SMES-152
(Click Here)

### 10.0 PACKAGING

Parts shall be packaging to protect the parts from damage during standard shipping, storage, and handling. Refer Molex.com specific part number webpage to get the exact packaging document for that item.



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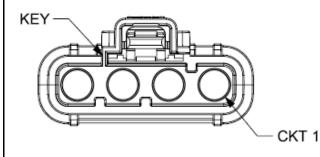
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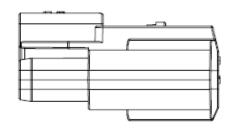
## PRODUCT SPECIFICATION

### 11.0 POLARIZATION AND KEYING OPTIONS

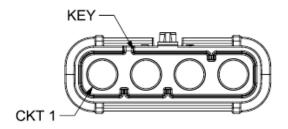
11.1 Receptacle Housing with CPA & w/o CPA (Series: 201841)

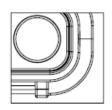


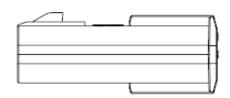




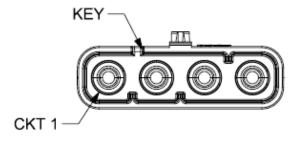
11.2 Plug Housing (Series: 201840)



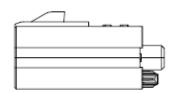




11.3 Vertical Header (Series: 201842)







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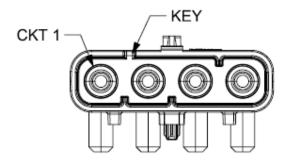
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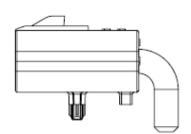


# **PRODUCT SPECIFICATION**

11.4 Right Angle Header (Series: 201843)









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